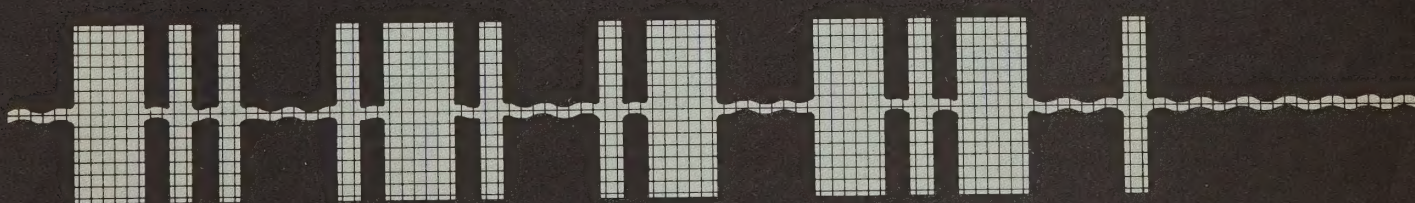
AUGUST 1976

DRAKE®

Equipment for Radio Communications



FULL LINE CATALOG

DRAKE®

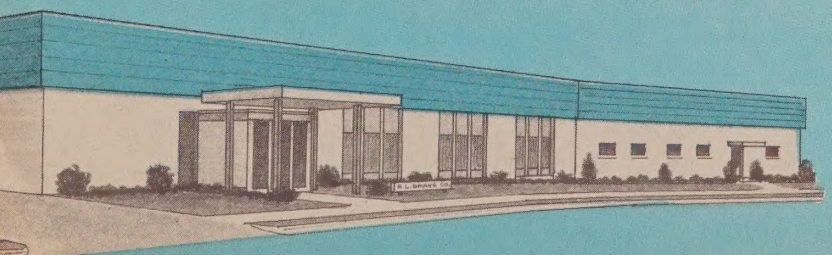
Known throughout the world for quality...

Radio Communications Equipment

Seeking a better way, in 1943 a young electrical engineer, with a significant background in radio design for major industrial concerns, launched the R.L. DRAKE COMPANY.

From a modest beginning, Robert L. Drake guided the growth of his company to a position of international importance in the communications field. Today, all over the world, wherever radio communications equipment is used, the name DRAKE is held in high esteem.

The extraordinary acceptance of DRAKE products rests on a solid foundation of customer satisfaction . . . in the outstanding performance of Drake Radio products.



R. L. DRAKE COMPANY
540 Richard Street, Miamisburg, Ohio 45342
Phone (513) 866-2421 • Telex 288-017

AMATEUR EQUIPMENT PRICE LIST

Prices Effective: July 15, 1976

R.L. Drake Company, 540 Richard Street, Miamisburg, Ohio 45342
Sales Office Phone: 513-866-3621 • Telex: 288-017
Western Service Center, 2020 Western Street, Las Vegas, Nevada 89102 • 702/382-9470

Model Number	Drake Model	Description	Suggested Amateur Net
Receivers (Communications) and Accessories			
1242	DSR-2	Vlf-Hf Digital Synthesized Communications Laboratory Receiver, ssb, a-m, cw, isb, RTTY	$2950.00
1211	R-4C	Amateur Hf Receiver, 160-10 meters	599.00
1217	4-NB	Noise Blanker for R-4C.	70.00
7011	FL250	Accessory I-f Filter	52.00
7013	FL500	Accessory I-f Filter	52.00
7015	FL1500	Accessory I-f Filter	52.00
7017	FL4000	Accessory I-f Filter	52.00
7019	FL6000	Accessory I-f Filter	52.00
1221	SPR-4	Solid State Programmable Receiver.	629.00
1227	5-NB	Noise Blanker for SPR-4	70.00
1229	DC-PC	12V-dc Power Cord (fits cigarette lighter).	5.00
6006	Dial	Plain crystal selector dial for SPR-4.	3.00
1225	RY-4	Teletype Adapter	20.00
1223	SCC-4	100 kHz Calibrator	20.00
1224	TA-4	Transceive Adapter	35.00
7001	KIT	Aeronautical Overseas — 7 crystals	36.40
7002	KIT	Amateur Band — 6 crystals	31.20
7003	KIT	Citizen Band — 1 crystal & freq. chart	5.25
7004	KIT	Marine Band — 11 crystals.	57.20
7005	KIT	MARS — 5 crystals	26.00
7006	KIT	Teletype Commercial—UPI, AP, Stock Market, Weather, etc.—4 crystals	20.80
7007	KIT	Time & Frequency Standard — WWV — 5 crystals	26.00
7008	KIT	Tropical Broadcast — 3 crystals	15.60
8201	SSR-1	General Coverage Receiver .5 to 30.0 MHz	350.00
8202	DC-PC	SSR-1/DC-PC Power Cord	5.00
1235	AL-4	Directional Loop Antenna for SPR-4.	29.00
1237	AN-5	Shortwave Antenna Kit	8.80
Transmitters			
1411	T-4XC	Amateur Hf Transmitter 160-10 meters	599.00
Transceivers and Accessories			
8333	TR-33C	2-meter Fm Transceiver, 12 channel portable.	229.95
1321	AA-10	10-watt 2-meter Amplifier	49.95
1323	MMK-22	Mobile/Dash/Desk Mount for TR22C	10.00
1333	MMK-33	Mobile/Dash/Desk Mount for TR33C	12.95

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Orders of less than $15.00 subject to $1.00 handling charge.

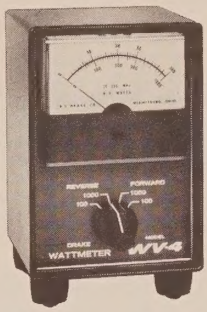
(Continued on back)

Model Number	Drake Model	Description	Suggested Amateur Net
Tranceivers and Accessories (continued)			
1311	TR-4C	80-10 meter Amateur Radio Transceiver, ssb, a-m, cw	$599.95
1317	34PNB	Plug-in Noise Blanker for TR-4 & TR-4C above Serial No. 31320	100.00
		For factory installation add $10.00	
1315	FF-1	Crystal Control for TR-4 and TR-6	46.95
1313	MMK-3	Mobile Mounting Kit for TR4 and TR6	7.00
1319	RV-4C	Remote VFO for TR-4C	120.00
Power Supplies			
1501	AC-4	110/220 V-ac Power Supply for all Drake 4-line equipment.	120.00
1503	AC-10	120 V-ac input 13.8 V-dc at 3 amp output for TR-22C, TR-33C, AA-10	49.95
1505	DC-4	12 V-dc Power Supply for Drake TR-4C Transceiver	135.00
Major Accessories and Miscellaneous			
1519	L-4B	Linear Amplifier w/Power Supply and Tubes	895.00
1507	MN-4	Antenna Matching Network.	110.00
1509	MN-2000	Antenna Matching Network.	220.00
1511	MS-4	Matching Speaker for R-4B, R-4C, SPR-4, SW-4A, TR-4 & TR-6.	24.95
1513	W-4	Rf Wattmeter 1.8 to 54 MHz	72.00
1515	WV-4	Rf Wattmeter 20 to 200 MHz	84.00
7072	7072	Drake Hand Held Microphone	19.00
7075	7075	Drake Desk Top Microphone	39.00
3501	RP-500	Protects receivers operating in range 10 kHz to 30 MHz from rf voltages of up to 500 V rms from 50 ohm antenna	90.00
1518	RCS-4	Remote Control Antenna Switch	120.00
7078	HS-1	Headphones	10.00
Crystals			
7020		Crystals for 2-C, R-4B, R-4C, SW-4A, T-4XB, T-4XC, SPR-4, ML-2.	5.25
		Crystals for fixed frequency operation of tunable units/2-NT.	7.85
		Crystals for TR-22.	7.85
		Crystals for TR-72 & TR-33C	6.30
Filters for TV-sets			
1603	TV-300-HP	High Pass Filter.	7.95
1610	TV-75-HP	High Pass Filter.	9.95
Low Pass Filters for Transmitters			
1605	TV-42-LP	For transmitting below 30 MHz, 100 watt continuous, 50 ohms, SO-239 Connectors	10.95
1608	TV-3300-LP	1000 watts continuous to 30 MHz with sharp cutoff above 30 MHz	19.95
1609	TV-5200-LP	1000 watts continuous to 30 MHz 100 watts continuous on 6 meters	19.95
Books			
7030		TR-4C, T-4XC, R-4C, SPR-4, 2-C, & C-4 Manuals	5.00
		All other Instruction Manuals	3.50
7025		DSR-2 Manual	20.00
7040		World Radio & TV Handbook 1976 edition	10.95

* * * *

Drake Directional RF Wattmeters

Model No. 1513
Drake W-4
1.8-54 MHz



Model No. 1515
Drake WV-4
20-200 MHz

Drake directional, through line wattmeters, using printed circuits, toroids, and state of the art techniques, permit versatile performance and unsurpassed accuracy, yet at a lower cost.

In contrast to VSWR measuring devices of the past, Drake wattmeters are frequency insensitive throughout their specified range, requiring no adjustments for power or VSWR measurements.

Negligible insertion loss allows continuous monitoring of either forward or reflected power for fast accurate tune up and checking of transmitter-antenna performance.

Indirectly measure radiated power (forward power minus reflected power) and VSWR by means of a plastic nomogram included.

Each wattmeter makes possible quick, accurate adjustments of antenna resonance and impedance match, when placed between transmitter and matching network.

High accuracy; ideal as laboratory instruments.

Removable coupler allows remote metering.

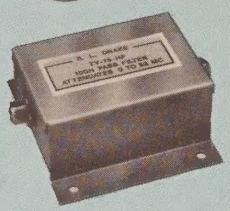
Specifications	W-4	WV-4
Frequency Coverage	1.8-54 MHz	20-200 MHz
Line Impedance	50 ohm resistive	50 ohm resistive
Power Capability	2000 W continuous	1000 W continuous
Jacks, Removable Coupler	Two S0239 input and output connectors	Type N input and output connectors.
Semiconductors	Two 1N295 power meter rectifiers	Two 1N695 power meter rectifiers
Accuracy	± (5% of reading +1% of full scale)	
VSWR Insertion	Insertion of wattmeter in line changes VSWR no more than 1.05:1	
Size—Cabinet:	6″H x 3.7″W x 4″D (15.3 x 9.4 x 10.2 cm)	
Coupler:	2.3″H x 3.5″W x 2.5″D (5.7 x 8.9 x 6.4 cm)	
Shipping—Weight:	3 lbs. (1.4 kg)	
Size:	8 x 5.8 x 7″ (20.3 x 14.6 x 17.8 cm)	
CONTROLS	Front panel 4 position switch selects scale and reflected power.	

Drake TVI Filters

High Pass Filters for TV Sets

provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.

Model No. 1603
Drake TV-300-HP
For 300 ohm twin lead



Model No. 1610
Drake TV-75-HP
For 75 ohm TV coaxial cable; TV type connectors installed

Low Pass Filters for Transmitters

have four pi sections for sharp cut off below channel 2, and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm. SO-239 connectors built in.

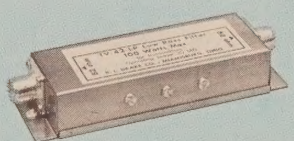
Model No. 1608 **Drake TV-3300-LP**

1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems.

Model No. 1609 **Drake TV-5200-LP**

200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LP.

Model No. 1605 **Drake TV-42-LP**



is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input.

Model No. 8201

Drake SSR-1

- Synthesized
- General Coverage
- Low Cost
- Selectable Sidebands
- All Solid State
- Built-in Ac Power Supply
- Excellent Performance

The SSR-1 Receiver provides precision tuning over the short wave spectrum of 0.5 to 30 MHz with capability of reception of a-m (amplitude modulated), cw (continuous wave) and ssb (upper and lower single side band) signals.

A synthesized/drift-cancelling 1st mixer injection system giving thirty tunable ranges from 0.5 to 30 MHz is derived from a single 10 MHz crystal oscillator providing frequency stability necessary for ssb operation.

A stable low frequency VFO tunes each of the 30 one-MHz ranges with a dial accuracy of better than 5 kHz which is sufficient to locate and identify a station whose frequency is known.

Separate detectors (product and diode) are used to provide for best performance whether listening to ssb or a-m signals. Narrow band selectivity for ssb and wide band selectivity for a-m reception is provided.

A manual tuned preselector provides for maximum sensitivity and maximum interference rejection.

Solid state circuitry throughout allows efficient operation from built-in ac power supply, internal batteries or external 12 V-dc source.

FRONT PANEL CONTROLS

MHz: Sets the MHz range of the received frequency. This control tunes the smaller inner dial (1) and is adjusted for the center of the desired MHz range.

Signal Meter: Indicates relative rf input signal level.

Pre-selector: Adjusts receiver rf tuned circuits for proper reception of signal. This control is tuned for maximum signal or noise at the selected frequency.

Frequency Display: Indicates tuned frequency.

The inner dial indicates MHz range and the outer dial indicates kHz reading. As an example: 5.750 MHz.

kHz: Tunes the kHz range of the receiver. This control turns the large outer dial (2) and is adjusted for the proper frequency as displayed on the graduations. This dial has a graduated scale from 000 to 1000 and is read as 0 to 1000 kHz or .000 to 1.000 MHz.

Clarify: Provides ultra fine frequency adjustment (approximately ±3 kHz range). This control is used primarily on ssb and cw signals for setting the pitch or sound accurately after the station has been roughly tuned in. It should be in the center position before any tuning is commenced.

Mode: Selects mode of reception. A-m (amplitude modulation), usb (upper single side band) and lsb (lower single side band). Cw (continuous wave) may be received on either usb or lsb position. The mode selector selects the proper detector (product detector for ssb and diode detector for a-m and i-f selectivity filter.

Band: Selects the proper range of received frequency.

Off-Volume: Turns radio on and off and adjusts audio output level.

Phone Jack: For ear phone reception or external speaker (8 ohms). Insertion of jack disconnects internal speaker.

Pilot Lamp Switch: On ac operation the pilot lamps are always lighted. The pilot lamps are normally extinguished on battery operation to conserve battery life. Pushing this momentary action switch turns on the pilot lamps.

Built-in Telescoping Antenna: The SSR-1 has such sensitivity that it operates near maximum practical limits. For optimum results, the receiver should be connected to an external antenna.

BACK PANEL CONTROLS

Record, External Battery, Mute Jack, Antenna Terminal Strip, Antenna Attenuator, Fuse.

DRAKE SSR-1 SPECIFICATIONS

I-f Rejection:
Greater than 50 dB @ f_d below 20 MHz.
Greater than 40 dB @ f_d above 20 MHz.

Antenna: Self contained telescopic whip antenna. External connection to terminal strip. (75 ohm input impedance—unbalanced.)

Frequency Coverage: 0.5 to 30 MHz in 30 ranges each tunable over 1 MHz range with a dial having 10 kHz graduations.

Reception Modes: Cw, usb, lsb, a-m.

Sensitivity: At least 10 dB S+N/N under the following conditions:

Mode	Freq.	Input Level*
Ssb	0.5-2 MHz	1.0μV
	2-30 MHz	0.3μV
A-m	0.5-2 MHz	3.0μV
	2-30 MHz	1.0μV

(A-m: 1000 Hz @ 30% modulation.)

Output: Capable of 200 mW output on ssb at 2 MHz with input signal of 0.5μV and 2 watts output with 5μV input.

Audio Distortion: Less than 5% @ 2 watts.

Calibration Accuracy: Within 5 kHz at all frequencies.

Selectivity	Bandwidth
Mode	6 dB
Ssb	3 kHz ±25%
A-m	5.5 kHz ±25%

Image Rejection: Greater than 50 dB

Audio Output Provisions: Internal 8 ohm speaker and phone jack on front panel that disables speaker when plugged in.

Muting Provisions: External mute jack (RCA type) that provides normal reception with closed circuit and mute with open circuit connections.

Power Supply: 8 type "D" (1.5 V) dry cell batteries (not included). Tapped transformer to provide operation from 117 V ±15% or 240 V ±10%-20%, 50-60 Hz source with automatic switch over to batteries when ac line is disconnected.

Current Consumption: Less than 100 mA quiescent at 12 V-dc.

Dial Lights: Momentary push button to light when on battery operation. Always on for ac operation.

Clarifier: Tunes minimum of ±2 kHz and maximum of ±5 kHz.

Size: 5.5"H x 13"W x 11"D (14 x 33 x 28 cm).

Weight: 14 lbs. (6.4 kg)

**These voltages are ½ the open circuit signal generator voltage, i.e., the voltage read on the meter of a HP Model 606 Generator.*

ACCESSORIES AVAILABLE:

Model No. 7078 **Drake HS-1 Headphones,**
Model No. 8202 **Drake DC-PC Dc Power Cord,**
Model No. 1237 **Drake AN-5 Antenna Kit,**
Model No. 7040 **World Radio & TV Handbook.**

Model No. 1221

Drake SPR-4

- **Programmable to meet specific requirements: SWL, Amateur, Laboratory, Broadcast, Marine Radio, etc.**
- **Direct frequency dialing: 150-500 kHz plus any 23 500 kHz ranges, 0.5 to 30 MHz**
- **FET circuitry, all solid state**
- **Linear dial, 1 kHz readout**
- **Band-widths for cw, ssb, a-m with built-in LC filter**
- **Crystals supplied for LW, seven SW, and bc bands**
- **Notch filter**
- **Built-in speaker**

The Drake model SPR-4 communications receiver may be programmed to suit your present and future needs. It is ideal for short wave listening or monitoring, aircraft radio and weather, marine ship and shore stations, hf communications, WWV time signals, CB, standard broadcast monitoring or DXing, amateur radio, civil defense, government, or use as a laboratory instrument.

In designing the SPR-4, Drake engineers incorporated the dual gate FET to produce the first no-compromise solid state receiver. Unlike receivers with bipolar transistors which have poor cross-modulation, intermodulation, agc, and overload performance; the SPR-4 has signal handling capabilities superior to the best tube receivers. In addition, the SPR-4 has all of the advantages of a solid-state design such as low power consumption, mechanical and thermal stability, reliability, etc.

The SPR-4 comes with ten bands installed which cover long wave, standard broadcast, and seven shortwave broadcast bands. Other bands, each with 500 kHz tuning range, can be added by purchasing a crystal which comes with an adhesive transparent dial sector for that range. A total of 24 bands are possible from 150 kHz to 30 MHz.

The main tuning dial reads 0 to 500 kHz with 1 kHz graduation marks using two concentric transparent discs, 0 to 100 kHz is indicated on one disc and hundreds of kHz are indicated on the other disc.

DRAKE SPR-4 SPECIFICATIONS

Frequency Coverage: Can be programmed with accessory crystals for 23 ranges (each tuning a 500 kHz band) from 0.5 to 30 MHz plus 150 to 500 kHz. Crystals supplied with the receiver allow coverage on these ranges: 150-500 kHz, 0.5-1.0 MHz, 1.0-1.6 MHz*, 6.0-6.5 MHz, 7.0-7.5 MHz, 9.5-10 MHz, 11.5-12 MHz, 15-15.5 MHz, 17.5-18 MHz, 21.5-22 MHz.

Modes of Operation: A-m, cw, lsb, usb, (RTTY with RY-4 accessory installed).

Selectivity: A-m: 4.8 kHz @ -6 dB, 10 kHz @ -60 dB. Ssb: 2.4 kHz @ -6 dB, 7.2 kHz @ -60 dB. Cw: 0.4 kHz @ -6 dB, 2.7 kHz @ -60 dB.

Intermediate Frequencies: 1st i-f 5645 kHz four pole crystal lattice filter, 2nd i-f 50 kHz four pole Hi-Q Ferrite LC filter.

Frequency Stability: At room temperature, drift for all causes (including ± 10% change in supply voltage) is less than ± 100 Hz.

Sensitivity: Ssb and cw: 0.25 microvolt for 10 dB S+N/N, a-m: 0.5 microvolt with 30% modulation for 10 dB S+N/N.

Image Rejection: Greater than 60 dB below 15 MHz. Greater than 50 dB above 15 MHz.

Blocking: An undesired unmodulated signal at least 20 kHz above or below a desired signal of .25 microvolt must be 90 dB stronger than the .25 microvolt signal to cause a 3 dB reduction of the signal to noise ratio of the desired signal.

Cross Modulation: An unwanted signal (modulated 30% at 1kHz) removed by at least 20 kHz from a desired signal of 1 microvolt, must have a signal level of at least 10 millivolts to produce a noticeable crossmodulation of the desired signal.

Intermodulation: Using a reference signal of .25 microvolt, two interfering signals of equal strength within the passband of the receiver front-end selectivity must each have a strength of at least 65 dB above the reference signal to produce third order products equal to the .25 microvolt reference signal.

Automatic Gain Control: Agc is used on a-m, cw, and ssb. Time constants are selected for the optimum effectiveness on each mode. Audio output is held constant to 6 dB over a 100 dB range of input signals. Jumper wire allows choice of fast or slow release on cw.

Input Impedance: 50 ohms approximately (high impedance 150 kHz to 1500 kHz)

Excessive Rf Input Voltage Protection: Withstands 30 volts rms from a 50 ohm generator continuously.

Output Power: 3 watts into 4 ohm load (less into higher impedance loads).

Power Consumption: 18 watts on 120 V-ac or 5¾ watts on 12 V-dc, 2.5 watts on 12 V-dc with dial lights turned off and with audio output adjusted for normal listening level.

Calibration: Dial is accurate to better than ± 1 kHz when calibrated at nearest 100 kHz calibration point.

Hum and Noise: More than 60 dB below rated output.

Size and Weight: 5.5″H x 10.8″W x 12.3″D (14 x 27.4 x 31.2 cm), 18 lbs (8.2 kg).

**Generous overtravel gives additional 50 kHz or more off each end of range.*

ACCESSORIES

Matching Speaker: Same size as SPR-4, has 5 x 7 speaker. Model No. 1511 Drake MS-4.

Calibrator: Plug-in 100 kHz crystal oscillator with harmonics that occur at 100 kHz intervals throughout the range of SPR-4. Model No. 1223 Drake SCC-4.

Noise Blanker: Plug-in i-f type noise blanker mutes receiver for duration of each noise pulse. 16 transistors, 2 diodes. Model No. 1227 Drake 5-NB.

Loop Antenna: Directional antenna nulls out undesired stations, plugs into receptacle through top of the cabinet, operates from 150 kHz to 1600 kHz only. Model No. 1235 Drake AL-4.

Antenna Kit: Consists of wire, insulators, lead-in, and instructions. Model No. 1237 Drake AN-5.

Dc Power Cord: Plugs into cigar lighter in an automobile, allows SPR-4 to be used on 12 volts dc supply. Model No. 1229 Drake DC-PC.

Teletype Adapter: Allows reception of standard teletype tones 2125/2975 Hz and 2125/2295 Hz by remote shifting BFO. Model No. 1225 Drake RY-4.

Transceive Adaptor: Allows SPR-4 to transceive with all T-4 and T-4X Transmitters. Consists of printed circuit board and connectors. Model No. 1224 Drake TA-4.

Headphone: Model No. 7078 Drake HS-1.

Model No. 1242

Drake DSR-2

- **Continuous Coverage 10 kHz to 30 MHz**
- **Digital Synthesizer Frequency Control**
- **Frequency Displayed to 100 Hz**
- **All Solid State**
- **A-m, Ssb, Cw, RTTY, lsb**
- **Series Balanced Gate Noise Blanker**
- **Front End Protection**
- **Optional Features Available on Special Order**

The R. L. Drake Model DSR-2 Receiver is a high grade communications receiver employing the most up-to-date solid state devices and circuitry. It provides continuous coverage from 10 kHz to 30 MHz. The received frequency is displayed on six nixie tubes to the nearest 100 Hz.

Frequency injections of the DSR-2 are controlled by a phase-locked digital synthesizer which allows incremental frequency selection in 10, 1, and 0.1 MHz steps. The remaining 0 to 0.1 MHz is continuously adjustable by a highly stable variable oscillator controlled from the fine tuning knob on the front panel. Modular construction on easily accessible printed circuit boards is used throughout the DSR-2. Extensive use of dual gate MOSFET transistors in the DSR-2 circuitry contributes to its superior intermodulation, avc, wide dynamic range and overload performance.

The front panel controls allow the operator to select frequency (with fine tune control), a-m or ssb product detector, i-f bandwidth, af gain, BFO pitch, fast or slow avc, manual rf gain, standby position, and the highly effective Drake series gate noise blanker. lsb (Independent Sideband) is a built-in feature of the DSR-2. Separate i-f crystal filter, i-f amplifier, and audio output circuits allow two simultaneous communication channels to be employed on one frequency assignment, doubling the information receiving capacity.

Front-end protection includes special circuitry built-in to provide protection against transmitters

in close proximity. It will withstand a 30 volt emf from a 50 ohm source, with the receiver on or off.

The normal avc system has appropriate attack and decay times to provide proper clean reception of ssb and cw signals. This avc system operates on both the rf and i-f circuitry to provide reception free of 'popping.' The rf avc provides an additional control under very strong signal conditions to increase the dynamic range. Front panel controls are available to decrease the decay time of the avc circuitry, to disconnect the avc circuitry and to provide manual control.

DRAKE DSR-2 SPECIFICATIONS

Frequency Range: 10 kHz to 30 MHz continuous range.

Modes of Operation: Usb, lsb, cw, RTTY, a-m, isb.

Frequency Readout: Complete to 100 Hz on six Nixie tubes.

Frequency Selection: 10 MHz, 1 MHz, 0.1 MHz steps switch selected. 0 to 0.1 MHz continuously variable.

Frequency Stability: Frequency drift does not exceed 200 Hz in any 8 hour period at constant ambient temperature between 0° and 40°C and ± 10% variation from nominal line voltage after ½ hour warmup.

Sensitivity: 0.01—0.5 MHz: Less than 4 microvolts for 10 dB SINAD at 2.4 kHz ssb mode. Less than 25 microvolts for 10 dB SINAD at 6 kHz a-m mode with 30% modulation. 0.5—30 MHz: Less than 0.3 microvolts for 10 dB SINAD at 2.4 kHz ssb mode. Less than 2 microvolts for 10 dB SINAD at 6 kHz a-m mode with 30% modulation.

Image Rejection: Greater than 60 dB relative to 1 microvolt below 10 MHz. Greater than 50 dB relative to 1 microvolt above 10 MHz.

I-f rejection: Greater than 60 dB relative to 1 microvolt except in range of 4.5 to 5.5 MHz.

Rf Blocking: Greater than 100 dB relative to 1 microvolt.
*Desired signal at 60 dB above 1 microvolt with a blocking signal removed 20 kHz and its amplitude adjusted to reduce desired signal 3 dB.

Crossmodulation: 70 dB relative to 1 microvolt.
*Desired signal at 60 dB above 1 microvolt with undesired signal removed 20 kHz and its amplitude adjusted for crossmodulation products 30 dB lower than desired signal.

Intermodulation: 70 dB relative to 1 microvolt.
*Level of two undesired signals, removed at least 30 kHz from the desired frequency, required to produce the equivalent audio output as desired signal 30 dB greater than 1 microvolt.

Opposite Sideband Suppression: Greater than 60 dB at 500 Hz into the opposite sideband.

I-f Bandwidth (in kHz):

Selectivity	−6 dB	−60 dB
6	6	11.5
2.4	2.4	4.3
1.2	1.2	2.4
0.3	0.3	0.6

Optional filters available for other bandwidths.

Automatic Volume Control: Audio output increases less than 3 dB for an rf input change of 100 dB.

Attack Time	1 millisecond
Release Time: (normal avc)	1 second
(fast avc)	100 milliseconds

Antenna Input Impedance:
10 kHz to 500 kHz 1000 ohms
500 kHz to 30 MHz 50 ohms

Antenna Input Protection: The receiver has built-in protection to prevent damage from a 30 volt signal applied to the antenna for a 15 minute period.

Audio Output: Communications channel: 2 watts at 5% maximum distortion into 4 ohm load (4 ohms unbalanced). 1 milliwatt into 600 ohm load (600 ohms balanced and center tapped). lsb channel: 1 milliwatt into 600 ohm load (600 ohms balanced and center tapped).

Audio Hum and Noise: Greater than 60 dB below rated output.

BFO: Derived from 5 MHz standard oscillator, or variable over a ± 3 kHz range from front panel control.

Power Requirements: 120/240 volts ± 10% single phase 50 to 420 Hz, 35 watts.

Dimensions: 5.5″H x 13.4″W x 15″D (14 x 34 x 38 cm).

Weight: 17 lbs (7.7 kg).

**Measurement Procedure*

Model No. 1211

Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz, 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity: 2.4 kHz 8-pole filter provided in ssb positions. 8.0 kHz, 6 pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability; may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

Scratch resistant epoxy paint finish.

DRAKE R-4C SPECIFICATIONS

Frequency Coverage: 3.5-4.0 MHz, 7.0-7.5 MHz, 14.0-14.5 MHz, 21.0-21.5 MHz and 28.5-29.0 MHz with crystals supplied. Fifteen accessory crystal sockets are provided for coverage of any 15 additional 500 kHz ranges between 1.5 and 30.0 MHz with the exception of 5.0-6.0 MHz.

Selectivity: Ssb—2.4 kHz at 6 dB down, 4.2 kHz at 60 dB down. A-m—8.0 kHz at 6 dB down, 28.0 kHz at 60 dB down. Filters with 0.25, 0.5, 1.5 and 6.0 kHz bandwidths at the −6 dB points are available for the cw1, cw2 and a-m modes. Product detection is used in the ssb, cw1 and cw2 modes; diode detection is used in the a-m mode. Agc switching is independent of mode switching.

I-f Frequencies: First i-f 5645 MHz wth 4-pole crystal filter. **Second** i-f 5695 MHz with 8-pole cyrstal lattice filter, and **third** i-f is 50 kHz with 2 LC tuned circuits.

Stability: Less than 100 Hz after warm-up. Less than 100 Hz for 10% change in line voltage.

Sensitivity: Less than 0.25 μV for 10 dB signal plus-noise-to-noise on all amateur bands. Less than 0.5 μV at any frequency.

Modes of Operation: Ssb, cw, a-m, RTTY, SSTV.

Dial Calibration: Main dial is calibrated from 0 to 500 kHz in 1 kHz increments. Calibration Accuracy: Better than 1 kHz when calibrated to the nearest 100 kHz point. Markers are at 25 kHz for greater accuracy.

Automatic Gain Control: Amplified agc has fast attack (less than 1 ms) and 3 selectable release times. Slow release is 1.0 second, medium release is 350 ms, and fast release is 50 ms. Audio output increases not more than 3 dB for 100 dB rf input change. (1 μV to 0.1 volt).

Audio Ouput: At least 2.0 watts into a 3.2 ohm load. 3000 ohm output available for anti-VOX.

Antenna Input Impedance: 52 ohms nominal.

Spurious Repsonses: Image rejection more than 70 dB; i-f rejection more than 70 dB on amateur ranges. Internal spurious ranges in amateur bands less than the equivalent of the 1 μV signal at the antenna.

Power Consumption: 60 watts, 120/240 V-ac, 50 to 400 Hz.

Dimensions: 5.5″H x 10.8″W x 11.7″ cabinet depth, 12.8″ overall depth (14 x 27.3 x 32.4 cm).

Weight: 17 lbs (7.7 kg).

CONTROLS AND JACKS

Front Panel: Main tuning, agc switch, passband tuning, notch filter, mode switch, function switch, preselector tuning, af and rf gain controls, bandswitch, accessory crystal switch and headphone jack.

Rear Panel: S-meter zero control, crystal filter sockets, auxiliary crystal sockets, accessory power socket, 120/240 V-ac power switch, line fuse, carrier oscillator jack, antenna jack, speaker jack, mute jack, anti-VOX/sidetone jack, PTO lamp jack and transmitter carrier oscillator jack.

C-Line Accessories

Model No. 1511

Drake MS-4 Matching Speaker

(Shown on facing page) for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).

Power Supplies for T-4, T-4X, T-4XB or T-4XC (The AC-4 can be housed in an MS-4 speaker cabinet).
Model No. 1501 Drake AC-4
Model No. 1505 Drake DC-4

Accessory Bandwidth Filters available: Model No. 7011 Drake FL250, Model No. 7013 Drake FL500, Model No. 7015 Drake FL1500, Model No. 7017 Drake FL4000, Model No. 7019 Drake FL6000.

Linear Amplifier see page 15

RF Wattmeters see page 3

Matching Networks see page 14

DRAKE MICROPHONES

Wired for use with Drake transmitters and transceivers, for either push-to-talk or VOX. Type of operation is determined by the VOX control setting of the transmitter.

Desk Type Model No. 7075

• **Type:** Heavy Duty Ceramic Desk Top • **Cable:** Four Foot, 3-Conductor, One Shield • **Output Level:** Minus 54 dB (0 dB = 1 volt/microbar) • **Frequency Reponse:** 80-7000 Hz • **Switching:** Adapts to either push-to-talk or VOX.

Hand-Held Type Model No. 7072

• **Type:** Ceramic, hand held • **Cable:** 11″ Retracted, 5′ extended, PVC 3 Cord, 1 shielded, Coil Cord • **Case:** Cycolac • **Finish:** Grey • **Output Level:** Minus 65 dB (0 dB = 1 volt/microbar) • **Frequency Response:** 300-3000 Hz • **Switching:** Adapts to either push-to-talk or VOX.

Model No. 1411

Drake T-4XC

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceives with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

Spotting function for easy zero-beating.

Easily adaptable to RTTY, either fsk or afsk.

Compact size; rugged construction. Scratch resistant epoxy paint finish.

DRAKE T-4XC SPECIFICATIONS

• **Frequency Coverage:** 3.5-4.0 MHz, 7.0-7.5 MHz, 14.0-14.5 MHz, 21.0-21.5 MHz and 28.0-28.5 MHz with crystals supplied. Four accessory crystal sockets are provided for additional 500 kHz ranges between 1.8 and 30.0 MHz, excluding 2.3-3.0 MHz, 5.0-6.0 MHz and 11.0-12.0 MHz. Crystals for fixed-frequency operation may be plugged into a front-panel socket for use between 1.8 and 30.0 MHz, excluding 2.3-3.0 MHz, 5.0-6.0 MHz and 10.5-12.0 MHz. • **Dial Calibration:** Main dial is calibrated from 0 to 500 kHz in 1 kHz increments. Calibration Accuracy: Better than 1 kHz when calibrated to the nearest 100 kHz point. • **Stability:** Less than 100 Hz after warm up. Less than 100 Hz with 10% change in line voltage. • **Modes of Operation: Ssb:** Upper or lower sideband on all bands. VOX or Push-to-talk. • **Cw:** Grid-block keying. VOX circuit is keyed for automatic transmit-receive switching. Sidetone oscillator is keyed for monitoring. Shifted carrier system has no spurious outputs. • **A-m:** Controlled-carrier a-m modulation system is built in. This system is compatible with ssb linear amplifiers. VOX or push-to-talk. • **RTTY:** Two methods of RTTY are available. **1.** The VFO is easily adaptable to fsk. Signal frequency shifts the same direction on all bands and the same amount on any band with a given dial setting. **2.** The RTTY signal also may be generated by applying undistorted audio tones at the mike input in the ssb mode. A jack is provided at the rear panel to shift the carrier oscillator frequency by an amount that, in the lsb position, the frequency bandpass through the sideband filter is shifted so that the tones of 2125 and 2975 Hz will pass with equal amplitude. • **Sideband Suppression:** 60 dB or better. Carrier Suppression: 60 dB or better. • **Average Distortion Products:** at least 30 dB down. • **Frequency Response:** 350 to 2750 Hz at 6 dB down. • **Input Power:** Ssb and a-m—200 watts PEP, cw—200 watts. • **Output Impedance:** Nominal 52 ohms adjustable with pi network. (SWR should be 2:1 or less). • **Microphone Input:** High impedance. • **Agc:** Operates on ssb to prevent flat-topping due to overdrive. • **Power Requirements:** (Provided by AC-3 and AC-4 power supplies). 650 volts dc at 200 mA average and 330 mA maximum with better than 10% regulation from 50 mA to 330 mA and maximum ripple of less than 1%. 250 volts dc at 120 mA with 10% regulation from 82 mA to 120 mA. This includes the effect of the 650 volt supply change if both voltages are obtained from the same transformer. Maximum ripple must be less than ¼%. Also −45 to −65 volts dc adjustable filtered bias into a 33 k ohm load, and 12.6 volts ac or dc at 3 amps. • **Dimensions:** 5.5″H x 10.8″W x 11.7″ cabinet depth, 12.8″ overall depth (14 x 27.3 x 31.4 cm). • **Weight:** 14.6 lbs (6.6 kg).

CONTROLS AND JACKS:

• **Front:** Main tuning, accessory crystal switch, mode switch, sideband selector, band switch, transceive switch, rf tune, microphone gain, plate tuning, plate loading control with relative output swtich, and fixed-frequency crystal socket. • **Rear:** Power connector, mute jack, receiver antenna jack, antenna connector, anti-VOX/sidetone jack, receiver injection jack, RTTY carrier oscillator shift jack, carrier oscillator output jack, PTO lamp jack, microphone jack, key jack, anti-VOX/sidetone gain control, VOX gain control, VOX delay control-cw, and VOX delay control-ssb a-m.

C-Line Accessories

Model No. 1511

Drake MS-4 Matching Speaker

(Shown on facing page) for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies).

Power Supplies for T-4, T-4X, T-4XB or T-4XC (The AC-4 can be housed in an MS-4 speaker cabinet).
Model No. 1501 Drake AC-4
Model No. 1505 Drake DC-4

Accessory Bandwidth Filters available: Model No. 7011 Drake FL250, Model No. 7013 Drake FL500, Model No. 7015 Drake FL1500, Model No. 7017 Drake FL4000, Model No. 7019 Drake FL6000.

Linear Amplifier see page 15

RF Wattmeters see page 3

Matching Networks see page 14

DRAKE MICROPHONES

Wired for use with Drake transmitters and transceivers, for either push-to-talk or VOX. Type of operation is determined by the VOX control setting of the transmitter.

Desk Type Model No. 7075

• **Type:** Heavy Duty Ceramic Desk Top • **Cable:** Four Foot, 3-Conductor, One Shield • **Output Level:** Minus 54 dB (0 dB = 1 volt/microbar) • **Frequency Reponse:** 80-7000 Hz • **Switching:** Adapts to either push-to-talk or VOX.

Hand-Held Type Model No. 7072

• **Type:** Ceramic, hand held • **Cable:** 11″ Retracted, 5′ extended, PVC 3 Cord, 1 shielded, Coil Cord • **Case:** Cycolac • **Finish:** Grey • **Output Level:** Minus 65 dB (0 dB = 1 volt/microbar) • **Frequency Response:** 300-3000 Hz • **Switching:** Adapts to either push-to-talk or VOX.

Model No's 1507 & 1509

Drake MN-4 & MN-2000 Matching Networks

MN-4 (Model No. 1507)

MN-2000 (Model No. 1509)

A Drake matching network is a worthwhile addition to any amateur station where peak performance is desired. Basically identical, except for power handling capabilities, the MN-4 and MN-2000 enable feedline SWR's of 5:1 to be matched to the transmitter. If input impedance is purely resistive, even higher SWR's can be handled. • Besides presenting a 50 ohm load to the transmitter, the Matching Network's built in rf wattmeter allows accurate and continuous power measurement and VSWR indication. The advanced wattmeter circuitry yields frequency-insensitive readings from 2 to 30 MHz, and accuracy until now obtainable only in expensive wattmeters. • Built-in bypass and coax antenna switch for maximum flexibility.

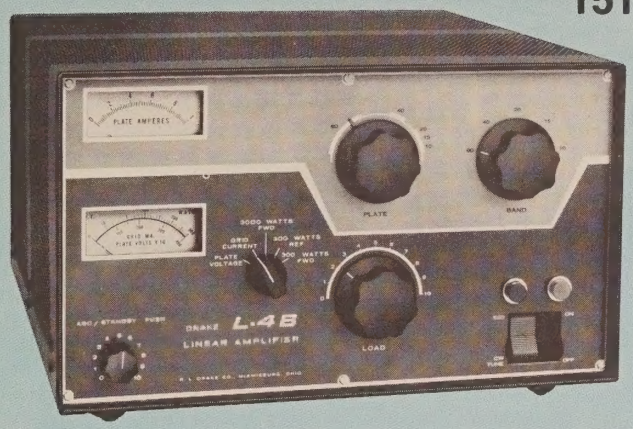
DRAKE MN-4 & MN-2000 SPECIFICATIONS

Frequency Coverage:	3.5 to 4.0 MHz, 7.0 to 7.3 MHz, 14.0 to 14.35 MHz, 21.0 to 21.45 MHz, 28.0 to 29.7 MHz	
Input Impedance:	50 ohms (resistive)	
Load Impedance:	50 ohm coax with VSWR of 5:1 or less (any impedance angle) 75 ohm coax at a lower VSWR can be used.	
Meter:	Reads forward power in watts, or VSWR	
Insertion Loss:	0.5 dB or less on each band after tuning	
	MN-4	**MN-2000**
Power Capability:	200 watts rf continuous	1000 watts rf average continuous duty, 2000 watts PEP
Wattmeter Accuracy:	± (5% of reading + 1% of full scale)	
Dimensions: (including connectors)[2]	5.5″H x 10.8″W x 8.5″D (14 x 27.3 x 21.6 cm)	5.5″H x 10.8″W x 14.4″D (14 x 27.3 x 36.5 cm)
Shipping: Weight: Dimensions:	9 lbs (4.1 kg) 11.8″ x 8″ x 10.3″ (29.8 x 20.3 x 26 cm)	18 lbs (8.2 kg) 18″ x 9″ x 15″ (45.7 x 22.9 x 38.1 cm)
FRONT PANEL CONTROLS	Resistive Tuning, Reactive Tuning, VSWR Calibration, Bandswitch, Watts/VSWR Selector Switch	
	—	Antenna/Dummy Load Switch
REAR PANEL	Ground Post and three SO-239 Connectors: one input, two outputs	Ground Post and four SO-239 connectors: One input, two outputs, one Alternate Antenna/Dummy Load

Other
C-Line Accessories
see page 11

Model No.
1519

Drake L-4B Linear Amplifier



• **2000 watts PEP ssb—1000 watts dc input power on cw, a-m, and RTTY.** Massive plate transformer, large heavy duty plate tank components and voluminous cooling system insure continuous operation at these ratings. • **High-efficiency Class B Grounded Grid Circuit** uses the new Eimac 3-500Z zero bias triodes. These tubes have a total plate dissipation rating of 1000 watts and their rugged construction withstands abuse. • **A broadband tuned input circuit** is employed on each band for minimum distortion, higher efficiency and a 50 ohm input impedance. • **Vernier Drive** on the plate tuning control for easy plate tuning. • **New Epoxy Finish** and eye-ease front panel. • **The L-4B matches the TR-4 and TR-4C Transceivers and the T-4, T-4X, T-4XB, and T-4XC Transmitters in appearance** and drive requirements to run the maximum legal input power. Any exciter that can deliver 100 watts PEP ssb and 75 watts on cw will be able to drive the L4B to the maximum legal input power. An advantage of the grounded grid circuit is that most of the driving power adds to the output power. • **Two taut-band suspension meters** indicate plate current, grid current, plate voltage, forward and reflected r-f power. The plate current meter time constant is consistant with FCC regulations. • **A transmitting agc circuit** controls the exciter gain to allow the highest average power without peak clipping. A front panel adjustment is provided to set the threshold level for optimum operation of different exciters. • **A standby switch** on the L4B allows the L4B to remain "On" while operating with the exciter only. • **Rf negative feedback** decreases distortion to better than 35 dB and tends to equalize tube characteristics from tube to tube and from brand to brand. • **Built-in rf directional wattmeter** calibrated 300 and 3000 watts forward and 300 watts reflected. • **An internal changeover relay** feeds the antenna through when on "Receive", "Standby", or when power is off. A pair of relay contacts bias the output tubes to cutoff, eliminating unwanted heat and diode noise when receiving. • **A quiet, internal blower**—low velocity, high volume. Effectively cools tube base seals, envelopes, and plate seals.

• **L-4B includes tubes, chimneys and a solid state power supply** which provides excellent dynamic and static voltage regulation. The power supply is separate to keep the weight off the operating desk and to make a more flexible installation.

DRAKE L-4B SPECIFICATIONS

• **Frequency Coverage**—Ham bands 80 through 10 meters. All frequencies 3.5 to 30 MHz may be covered with alteration of input coils. • **Plate Input**—2000 watts PEP—ssb, 1000 watts dc on cw, a-m and RTTY. • **Drive Requirements**—100 watts PEP—ssb, 75 watts cw, a-m and RTTY. • **Input Impedance**—50 ohms. • **Output Impedance**—Adjustable pi-network matches 50 ohm line with SWR not to exceed 2:1. • **Wattmeter Accuracy**—300 watts forward and reflected, ± (5% of reading + 3 watts). 3000 watts forward, ± (5% of reading + 30 watts). • **Power Requirements**—230 volts 50—60 cycles 15 amperes, or 115 volts 50—60 cycles 30 amperes. • **Dimensions —Amplifier** 14″W x 7.9″H x 14.4″D (35.4 x 20 x 36.4 cm), **Power Supply** 6.8″W x 7.9″H x 11″D (17.1 x 20 x 27.9 cm). • **Weight— Amplifier** 32 lbs (14.5 kg), **Power Supply** 43 lbs (19.5 kg). • **Tube Complement**—Two 3-500Z (Two 8163 or Two 3-400Z can be used). • **Shipping Wt & Size: Power Supply** 48 lbs (21 kg), 11.5″ x 11″ x 13.5″ (29.2 x 27.9 x 34.3 cm); **Amplifier** 42 lbs (19.1 kg), 21″ x 12″ x 17″ (53.3 x 30.5 x 43.2 cm).

FRONT PANEL CONTROLS

• **On-Off**—Rocker Switch. • **Ssb-Cw/Tune**—Rocker switch changes plate voltage for different modes of operation. • **Band**—Switch selects desired ham bands (See Frequency Coverage). • **Plate and Load**—Tuning adjust pi-network capacitors in tank circuit for proper resonance and loading on all bands. • **Meter**—Switch selects monitoring either grid current, plate voltage, forward or reflected rf power on the lower meter. • **Alc/Standby Push**—Transmitting agc threshold adjustment and push-pull switch that allows the L-4B to remain on while operating with the exciter only. • **Rear Jacks**—Power (connects L-4B to power supply), high voltage, VOX (for turning on L-4B with exciter VOX contacts), transmitting agc (for connecting transmitting agc to exciter), rf input (for connecting to exciter rf output), rf output (for connecting L-4B to an antenna. • **Meter**—Switch selects monitoring either grid current, plate voltage, forward or reflected rf power on the lower meter. • **Alc/Standby Push**—Transmitting agc threshold adjustment and push-pull switch that allows the L-4B to remain on while operating with the exciter only. • **Rear Jacks**—Power (connects L-4B to power supply), high voltage, VOX (for turning on L-4B with exciter VOX contacts), transmitting agc (for connecting transmitting agc to exciter), rf input (for connecting to exciter rf output), rf output (for connecting L-4B to an antenna). • **Meters**—Plate Current, Grid Current/Plate Voltage/Forward Power/Reflected Power (switch selected). • **Power Supply Controls**—Two circuit breaker reset buttons.

DRAKE® **AMATEUR TRANSCEIVER**

Model No. 1311

Drake TR-4C Sideband Transceiver

with Model No. 1319 Drake RV-4C Remote VFO

The Transceiver for All License Classes

- **Ideal for the licensee in the up-graded Novice/Technician Class.**
- **Runs the full 250 watt cw input.**
- **80 thru 10 meters**
- **1 kHz dual concentric dial**
- **Excellent PTO stability**
- **Full gating noise blanker optional**
- **Transceive or separate PTO**
- **Wide range receiving agc**
- **Calibration constant mode to mode**
- **300 watts PEP input on ssb**
- **Shifted-carrier cw**
- **Upper and lower sideband**
- **Superb receiver overload and Cross-Mod characteristics**
- **VOX or PTT**
- **Output impedance adjustable**

The many years of transceiver experience and design improvements behind the Drake TR-4C make it one of the finest transceivers available in both circuit design and packaging. Compact and lightweight, it is ideal for mobile use, portable excursions, and vacations. Usb, lsb, cw, or a-m operations is at your finger tips.

• **300 Watts PEP** input on ssb, 260 watts input on cw. • **Complete Amateur Band Frequency Coverage:** 80 through 15 meter bands complete and 28.5-29.1 MHz of 10 meters. Rest of 10 meter band obtained with accessory crystals. • **Separate Sideband Filters:** Separate usb and lsb filters eliminate oscillator shifting and insure long term carrier vs filter alignment. • **Nominal 1.7:1 Filter Shape Factor:** These filters stand among the industry's finest with 6dB bandwidth of 2.1 kHz (chosen to slice thru QRM), 60 dB bandwidth of only 3.6 kHz and 100 dB ultimate rejection. • **Provision For Highly Effective Accessory Noise Blanker.** • **Heavy Irridited Cadmium Plated Chassis.** • **Cw Side Tone Oscillator** for monitoring your cw transmission. • **Finish:** Scratch resistant epoxy paint. • **Crystal Calibrator** built in. • **VFO Indicator Light** eliminates confusion of which main tuning knob controls the frequency when using an RV-4C remote VFO. • **Automatic Cw Transmit Receive Switching** sometimes called "semi" break-in. • **Full Agc** with Drake dual time constant system confines a 60 dB signal change to a 3 dB audio change. • **Effective Transmitting Agc** insures clean ssb output. • **Solid State Permeability Tuned VFO** for low drift and accurate 1 kHz divisions on all bands. New easy to read dual concentric dials. • **VOX or PTT** for use on a-m or ssb. • **Receiver S-Meter** automatically switches to indicate transmitting agc on transmit. • **Transmitter Plate Ammeter** indicates **Relative Rf Output** by depressing load control shaft. • **Adjustable Pi-Network** output circuit.

DRAKE TR-4C SPECIFICATIONS

• **Frequency Coverage:** Full coverage on all amateur bands 10 thru 80 meters, in seven 600 kHz ranges, with crystals supplied: 3.5 to 4.1 MHz, 7.0 to 7.6 MHz, 13.9 to 14.5 MHz, 21.6 MHz, 28.5 to 29.1 MHz. Accessory crystals available for 28-28.6 and 29.1-29.7 ranges. • **Solid State VFO:** Has linear permeability tuning. Tunes 4.9 to 5.5 MHz for all ranges. • **Dial Calibration:** New concentric dials. 100 kHz markings on one dial, 1 kHz division on second dial. • **Frequency Stability:** High stability solid state VFO tunes same range on all bands. Drift is less than 100 Hz after warm-up, and less than 100 Hz for plus or minus 10% line voltage change. • **Modes of Operation:** Ssb upper and lower sideband, cw and a-m. • **Power Supply Requirements:** Due to the 300 watt, PEP input rating, the TR-4C requires a power supply capable of low voltage at high current with very good dynamic regulation. The voltage and current requirements are as follows: 1. 650 volts at 300 mA average and 500 mA maximum with 10% regulation from 100 mA to 500 mA and maximum ripple of less than 1%. 2. 250 volts at 175 mA with 10% regulation from 150 mA to 180 mA. This includes the effect of the 650 volt supply change if both voltages are obtained from the same transformer. Maximum ripple must be less than ¼%. 3. −45 to −65 V-dc adjustable filtered bias into 33K ohm load. 4. 12.6 volt ac or dc at 5.5 amps. • **Misc:** 20 tubes including voltage regulator; two transistors; 8 diodes; 100 kHz crystal calibrator built in; **Dimensions:** 5.5″H x 10.8″W x 14.4″D (13.9 x 27.3 x 36.5 cm). **Weight:** 16 lbs (35.2 kg). **Shipping:** Dimensions; 18″ x 9″ x 15″ (45.7 x 22.9 x 38.1 cm). Weight; 21 lbs (46.2 kg).

TRANSMITTER SPECIFICATIONS:

• **Single Sideband.** 300 watts PEP input power, VOX or PTT. Two special 9 MHz crystal filters provide upper or lower sideband selection on any band, without the necessity of shifting oscillators. Unwanted sideband suppression of more than 60 dB and carrier suppression of 60 dB. Overall audio frequency response 400 to 2500 hertz at 6 dB down. Distortion products 30 dB down from maximum output. • **Cw: Power input 260 watts.** Carrier is shifted approximately 1000 hertz into one sideband, and mixer and driver are keyed. Grid block keying is free from chirps and clicks. Automatic transmit/receive switching when key is operated. Cw sidetone oscillator for monitoring. • **A-m:** Controlled carrier a-m screen modulator is built-in. 260 watts PEP input. Low carrier power increases 6 times to 50 watts output at maximum modulation. This system is compatible with ssb linears. VOX or PTT. A diode envelope detector is used in this mode. Product Detector can be used by switching manually. • **Output Impedance:** Nominal 50 ohms, adjustable with pi-network. • **Microphone Input:** High-impedance.

RECEIVER SPECIFICATIONS:

• **Sensitivity:** Less than ½ microvolt for 10 dB S/N. • **I-f Selectivity:** 2.1 kHz at 6 dB, 3.6 kHz at 60 dB. • **Agc:** Full agc on received modes—audio output varies less than 3 dB for 60 dB change in signal level. Any amount of agc from zero to full can be obtained by adjustment of rf gain control. Time proven Drake agc system provides fast attack and slow release with noise pulse suppression, no pumping or popping evident. • **Antenna Imput:** Nominal 50 ohms. • **Audio Response:** 400 to 2500 Hz at 6 dB. • **Audio Output Power:** 3 watts. • **Impedance:** 4 ohms.

CONTROLS

• **Front Panel Controls: "Main Tuning"** has spinner knob with adjustable skirt for calibrating main dial. Tunes VFO and rotates main dial. **"RF Tune"** tunes the rf circuits common to receiver rf amplifier and transmitter driver stages. 0-10 scale. **"Plate" and "Load"** tuning adjust pi-network capacitors in transmitter for proper resonance and loading on each band. Load control also converts ammeter to relative output when pushed in. **"Band"** switch selects desired ham band (see frequency coverage). **"Function"** switch has four positions "CAL, SSB, CW, AM." "CAL" operates built-in 100 kHz crystal calibrator for accurate setting of main tuning hair line indicator and knob skirt. "SSB" provides ssb operation, either VOX or PTT. "CW" provides for cw operation with automatic transmit receive switching and cw sidetone, and is used for tune up. "AM" provides for a-m operation with VOX or PTT, and with diode detector for receiving. **"Xmtr Gain"** functions as mike audio gain on ssb and a-m, and as carrier injection control on cw for tune and cw. **"Rcvr Gain"** knob controls receiver af gain and power ON-OFF switch. Lever behind knob controls setting of rf gain. **"Sideband"** switch in conjunction with indicator lights marked **"Upper"** and **"Lower"** selects desired sideband by connecting into the circuit either the upper or lower sideband filter. • **Right Side Screwdriver Adjust Controls:** Vox Gain, Anti-Vox Gain, S-Meter Zero. • **Right Side Jacks:** Headphone (disconnects speaker circuit), Microphone (3-circuit for PTT), Key (normally closed). • **Rear Controls:** Sidetone gain, Dial light dimmer. • **Rear Jacks:** Power (connects TR-4C to power supply and speaker), MUTE (for muting an external receiver), EXT RCV (for connecting an external receiver to the antenna), Antenna (for connecting the TR-4 to the antenna). • **Left Side Controls**—Transceive/External receive switch (for selecting between the use of the TR-4C or an external receiver.) • **Inside Controls:** Carrier balance. • **Meters:** Receiver S-meter/transmitting agc indicator and plate ammeter/relative rf output indicator.

TR-4C ACCESSORIES

Model No. 1319 **Drake RV-4C Remote VFO** consists of a highly stable permeability-tuned solid-state VFO, a cathode follower, control circuitry and a 5-inch 4 ohm speaker. For use with TR-3, TR-4 and TR-4C transceivers, it permits reception, transmission, or both on a frequency different from the VFO setting of the transceiver, but in the same band to which the transceiver is tuned. • **Two Controls:** Main Tuning and RV-4C Function. • The RV-4C cabinet matches the transceiver and will house an AC-4 (or AC-3) power supply. • **Size:** 5.4″H x 10.8″W x 11.2″D (13.7 x 27.3 x 28.3 cm). **Weighs:** 6.5 lbs (3 kg).

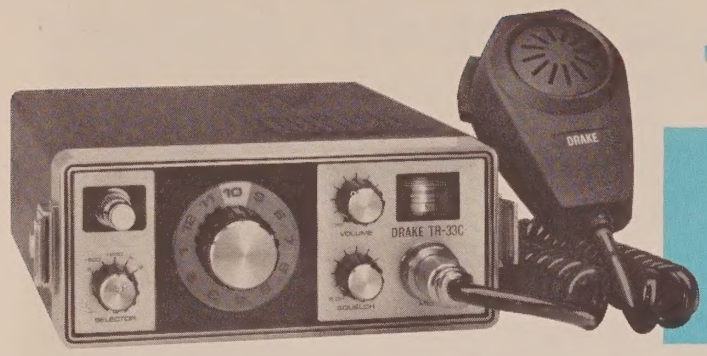
Model No. 1315 **Drake FF-1 Fixed Frequency Adapter** allows crystal control operation on Receive or Transmit or both with up to two channels.

Model No. 1501 **Drake AC-4 Power Supply,** for use with all Drake 3 or 4 series trasceivers and transmitters, supplies all the required voltages with the proper filtering and regulation and may be operated from 120 or 240 volts ac, 50 or 60 Hz. Fits inside the Model MS-4 Matching Speaker or the Remote VFO unit. • **SPECIFICATIONS: Input:** 120 or 240 volts ac 50/60 Hz. • **Output:** 650 volts dc at 300 mA average (500 mA peak). 250 volts dc at 175 mA. −45 to −65 volts dc adjustable bias into 33 K ohms. 12.6 volts ac at 5.5 amperes. • **Size:** 5″H x 10″W x 4.8″D (12.7 x 25.4 x 12 cm). • **Weight:** 17.2 lbs (7.8 kg).

Model No. 1505 **Drake DC-4 Power Supply** 12 V-dc Solid State for Drake 3 and 4-series transceivers.

Model No. 1511 **Drake MS-4 Matching Speaker** (details page 11).

DRAKE® Amateur VHF FM Transceiver



Model No. 8333

Drake TR-33C

- **SCPC* Frequency Control**
- **Lower Receiver Battery Drain**
- **Expanded Portable Antenna Choice**

**Single Crystal Per Channel*

• 12 Channels—only one crystal per channel provides simplex OR repeater operation on ANY channel. 2 channels supplied. 5 transmit offset positions, 3 supplied. • All FET front-end crystal filter for superb receiver intermod rejection. • Small convenient microphone included. • New lower power drain circuit on squelched receive. • Nicad rechargeable batteries supplied. • Built-in battery charger. • Ac and dc power cords supplied. • Telescoping screw-on antenna supplied, rubber helix optional. • Channel indicator light when using external dc supply. • Carry strap supplied. • Meter Indicates receive strength, xmit output, or battery voltage. • External speaker jack on rear panel. • Auxiliary jack on rear panel—may be used for tone-pad connections, etc. • Traditional R.L. Drake service backup.

ACCESSORIES

- **Model AA-10 Power Amplifier.**
- **Model AC-10 Power Supply.**
- **Accessory Crystals.**
- **Model MMK-33 Mobile Mount.**

DRAKE TR-33C SPECIFICATION'S

GENERAL: • **Frequency Coverage:** 146-148 MHz, 12 channels (2 supplied: 146.52 and 146.94). Crystal determines receive frequency. • Transmit frequency offset for repeater operation determined by 5-position switch: Simplex, +600 kHz, and −600 kHz supplied; any two additional offsets available with accessory crystals. • **Power requirements:** 13.0 volts dc ± 15% external supply OR internal battery supply. • **Current Drain (Batteries):** Squelched receive: 30 mA; transmit: 400 mA. External supply: above plus 45 mA for channel switch indicator lamp. • **Antenna:** 50 ohm external antenna through SO-239 connector OR screw-on telescoping whip antenna supplied, may be replaced with rubber helix antenna. • **Dimensions:** 5.5″ x 2.8″ x 8.5″ (13.8 x 5.8 x 21.6 cm). • **Weight:** 4.4 lbs (2 kg).

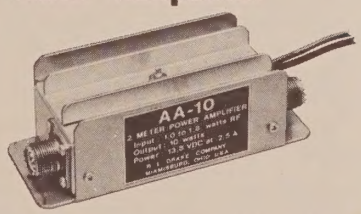
RECEIVER: • **Sensitivity:** less than .5 μV for 20 dB noise quieting. • **Selectivity:** ± 30 kHz adjacent channel rejection greater than 75 dB. • **Modulation acceptance:** at least ± 7 kHz. • **Inter modulation Rejection:** 70 dB referenced to sensitivity level. • **First i-f:** 10.7 MHz with monolithic crystal filter. • **Second i-f:** 455 kHz with ceramic filter. • **Audio Output:** nominal 1 watt at less than 10% distortion into 8 ohm built-in speaker or external speaker.

TRANSMITTER: • **Rf Output Power:** 1.5 watts nominal, with 13.0 volts dc supply. • **Frequency Deviation:** Direct frequency modulation adjustable to at least ± 7 kHz deviation, factory set at ± 5 kHz. • Separate microphone gain and deviation adjustments.

Model No. 1321

Drake AA-10 Power Amplifier

10 dB power increase greatly adds to the transmitting distance covered by and 2-meter fm transceiver running up to 1.8 watts output



Small size: 2″H x 2.1″W x 5.5″D (51 x 52 x 140 mm)

• Single stage solid-state balanced emitter vhf power transistor with VSWR protection. • Has no relays—automatic transmit/receive switching.

SPECIFICATIONS: • **Frequency Coverage:** 144-148 MHz. • **Rf Output Power:** 10 watts minimum at 13.8 volts dc and rated input power. • **Rf Input Power:** 1 watt nominal, 1.8 watt maximum. • **Receive Loss:** Fraction of 1 dB—unnoticeable. • **Connectors:** Type SO-239 Antenna and Transceiver Connectors. • **8 Semi-conductors.** • **Power Requirements:** 13.8 volts dc at 1.5 amperes.

Model No. 1503

Drake AC-10 Power Supply

Powers the AA-10, TR-22C, TR-33C and TR-72. Simultaneously can charge the TR-22C/33C nicads. Supplies 13.8 volts up to 3 amps from 120 V-ac 60 Hz input.

Drake Crystals

Fixed Frequency: Operation with:

T-4X*	For operation below 10 MHz, Xtal.
T-4XB*	Freq. = Oper. Freq. + 5.645.
T-4XC	For operation above 10 MHz.
R-4A	Xtal Freq. = $\frac{\text{Oper. Freq.} + 5.645}{2}$
R-4B	

**Modified for fixed frequency operation*

Variable Frequency: Operation with:

T-4X
T-4XB
T-4XC
R-4A
R-4B
R-4C

Xtal Freq. = low end of Oper. Band. in MHz + 11.1.

Crystals for:

TR-33C

Specify Transmit or Receive and Frequency

SPR-4 Crystals

Operating Frequency in MHz	Crystal Frequency in MHz	Operating Frequency in MHz	Crystal Frequency in MHz
.15 — .5*		15.0 — 15.5*	26.09
.5 — 1.0*	11.59	15.5 — 16.0	26.59
1.0 — 1.5*	12.09	16.0 — 16.5	27.09
1.5 — 2.0	12.59	16.5 — 17.0	27.59
2.0 — 2.5	13.09	17.0 — 17.5	28.09
2.5 — 3.0	13.59	17.5 — 18.0*	28.59
3.0 — 3.5	14.09	18.0 — 18.5	29.09
3.5 — 4.0	14.59	18.5 — 19.0	29.59
4.0 — 4.5	15.09	19.0 — 19.5	30.09
4.5 — 5.0	15.59	19.5 — 20.0	30.59
5.0 — 5.5	16.09	20.0 — 20.5	31.09
5.5 — 6.0	16.59	20.5 — 21.0	31.59
6.0 — 6.5*	17.09	21.0 — 21.5	32.09
6.5 — 7.0	17.59	21.5 — 22.0*	32.59
7.0 — 7.5*	18.09	22.0 — 22.5	33.09
7.5 — 8.0	18.59	22.5 — 23.0	33.59
8.0 — 8.5	19.09	23.0 — 23.5	34.09
8.5 — 9.0	19.59	23.5 — 24.0	34.59
9.0 — 9.5	20.09	24.0 — 24.5	35.09
9.5 — 10.0*	20.59	24.5 — 25.0	35.59
10.0 — 10.5	21.09	25.0 — 25.5	36.09
10.5 — 11.0	21.59	25.5 — 26.0	36.59
11.0 — 11.5	22.09	26.0 — 26.5	37.09
11.5 — 12.0*	22.59	26.5 — 27.0	37.59
12.0 — 12.5	23.09	27.0 — 27.5	38.09
12.5 — 13.0	23.59	27.5 — 28.0	38.59
13.0 — 13.5	24.09	28.0 — 28.5	39.09
13.5 — 14.0	24.59	28.5 — 29.0	39.59
14.0 — 14.5	25.09	29.0 — 29.5	40.09
14.5 — 15.0	25.59	29.5 — 30.0	40.59

*SPR—4 normally supplied with these operating frequencies.

Crystal Frequencies for Equipment Working through Repeaters

Drake stocks TR-33C cystals for the following frequencies which are normally available for immediate shipment. Crystals for other frequencies usually require approximately four weeks delivery.

Repeater Frequencies		Simplex Frequencies	
Frequency in MHz		Frequency in MHz	
Transmit†	Receive	Transmit†	Receive
146.01	146.61	146.40	146.40
146.04	146.64	146.43	146.43
146.07	146.67	146.46	146.46
146.10	146.70	146.49	146.49
146.13	146.73	146.52	146.52
146.16	146.76	146.55	146.55
146.19	146.79	146.58	146.58
146.22	146.82		
146.25	146.85		
146.28	146.88		
146.31	146.91		
146.34	146.94		
146.37	146.97		

NOTE: Orders for crystals outside the 2 Meter Band will not be accepted.

†Standard Repeater and Simplex frequencies. Separate Transmit Crystals are not needed for the TR-33C since it uses a single Crystal per channel and has built-in standard Transmit offsets. Special offsets available.

SPR-4 CRYSTAL KITS

Amateur Bands—160m, 80m, 20m, 15m and 10m ranges. Six crystals cover:

1.5 — 2.0 MHz
3.5 — 4.0
14.0 — 14.5
21.0 — 21.5 MHz
28.0 — 28.5
28.5 — 29.0

Marine Bands—Eleven crystals cover:

2.0 — 2.5 MHz
2.5 — 3.0
4.0 — 4.5
8.0 — 8.5
8.5 — 9.0 MHz
12.0 — 12.5
13.0 — 13.5
16.5 — 17.0
17.0 — 17.5 MHz
22.0 — 22.5
22.5 — 23.0

Aeronautical Overseas—Seven crystals cover:

2.5 — 3.0 MHz
3.0 — 3.5
4.5 — 5.0
5.5 — 6.0
6.5 — 7.0 MHz
8.5 — 9.0
13.0 — 13.5

Time & Frequency Standard, WWV— Five crystals cover:

2.5 — 3.0 MHz
5.0 — 5.5
10.0 — 10.5
15.0 — 15.5 MHz (orginal equipment)
20.0 — 20.5
25.0 — 25.5

Citizens Band—One crystal and Frequency chart:

27.0 — 27.5 MHz* (*Generous overtravel gives additional 50 kHz or more off ends of each range).

Tropical Broadcast—Three crystals cover:

2.0 — 2.5 MHz
3.0 — 3.5 MHz
4.5 — 5.0 MHz

MARS—Five crystals cover:

2.0 — 2.5 MHz
3.0 — 3.5
4.0 — 4.5 MHz
5.0 — 5.5
18.0 — 18.5 MHz

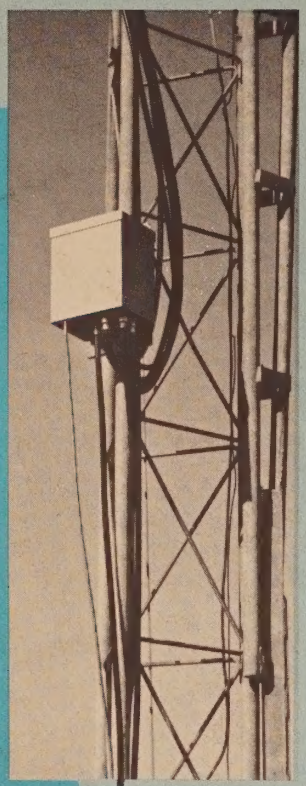
Teletype Commercial—UPI, AP, Stock Market, Weather, etc.—Four crystals cover:

7.5 — 8.0 MHz
9.0 — 9.5
13.5 — 14.0 MHz
15.5 — 16.0

Remote Coax Switch

Model No. 1518

Drake RCS-4



- Remotely Selects One of Five Antennas
- Grounds All Unused Antennas
- Grounds All Antennas in Gnd Position for Lightning Protection
- Front Panel Indicator Monitors Antenna Selection Interval
- Protected Against Adverse Weather Conditions
- SO-239 Connectors Provided for Main Coax Feed-Line and Individual Antenna Feed-Lines
- Handles 2000 Watts PEP
- Available in 120 V-ac or 240 V-ac 50/60Hz Versions

• Control unit works on 110/220 V-ac, 50/60 Hz, and supplies necessary voltage to motor. • Excellent for single coax feed to multiband quads or arrays of monobanders. The five positions allow a single coax feed to three beams and two dipoles, or other similar combinations. • Control cable (not supplied) same as for HAM-M rotator. • Selects antennas remotely, grounds all unused antennas. Gnd position grounds all antennas when leaving station. "Rain-Hat" construction shields motor and switches. • Up to 30 MHz, insertion of switch changes VSWR no more than 1.05:1. • From 30 MHz to 150 MHz, insertion changes VSWR no more than 1.5:1. • Motor: 24 V-ac, 2 amp. Lubrication good to −40°F. • Switch Rf Capability: Maximum legal limit.

MID COM ELECTRONICS, INC.
2506 S. BRENTWOOD BOULEVARD
ST. LOUIS, MISSOURI 63144
314-961-9990

R. L. DRAKE COMPANY

DRAKE®

540 Richard Street,
Miamisburg, Ohio 45342

Phone (513) 866-2421 • Telex 288-017

Western Service Center, 2020 Western Street
Las Vegas, Nevada 89102 • 702/382-9470